

**METRO VANCOUVER REGIONAL DISTRICT  
GEORGE MASSEY CROSSING TASK FORCE**

**REGULAR MEETING**

**Wednesday, October 2, 2019**

**1:00 p.m.**

**28<sup>th</sup> Floor Committee Room, 4730 Kingsway, Burnaby, British Columbia**

**A G E N D A<sup>1</sup>**

**1. ADOPTION OF THE AGENDA**

**1.1 October 2, 2019 Regular Meeting Agenda**

That the George Massey Crossing Task Force adopt the agenda for its regular meeting scheduled for October 2, 2019 as circulated.

**2. ADOPTION OF THE MINUTES**

**2.1 July 24, 2019 Regular Meeting Minutes**

That the George Massey Crossing Task Force adopt the minutes of its regular meeting held July 24, 2019 as circulated.

**3. DELEGATIONS**

**4. INVITED PRESENTATIONS**

**4.1 Lina Halwani, Director Planning, Major Project Director, George Massey Crossing,  
Ministry of Transportation and Infrastructure**

**Pam Ryan, Engagement Advisor, George Massey Crossing Project, Ministry of  
Transportation & Infrastructure**

**Subject: Results of Technical Evaluation**

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<sup>1</sup> Note: Recommendation is shown under each item, where applicable.

**5. REPORTS FROM COMMITTEE OR STAFF**

**5.1 George Massey Crossing Project – Results of Technical Evaluation on the Six Short Listed Options**

*Designated Speaker:*

*Heather McNell, Director of Regional Planning and Electoral Area Services*

That the George Massey Crossing Task Force receive for information the report titled “George Massey Crossing Project – Results of Technical Evaluation on the Six Short Listed Options” dated September 24, 2019.

**6. INFORMATION ITEMS**

**7. OTHER BUSINESS**

**8. BUSINESS ARISING FROM DELEGATIONS**

**9. RESOLUTION TO CLOSE MEETING**

*Note: The Committee must state by resolution the basis under section 90 of the Community Charter on which the meeting is being closed. If a member wishes to add an item, the basis must be included below.*

**10. ADJOURNMENT/CONCLUSION**

That the George Massey Crossing Task Force adjourn/conclude its regular meeting of October 2, 2019.

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**Membership:**

Dhaliwal, Sav (C) - Metro Vancouver Board  
Baird, Ken - Tsawwassen First Nation  
Brodie, Malcolm - Richmond  
Coté, Jonathan - TransLink Mayor’s Council on  
Regional Transportation

Froese, Jack - Langley Township  
Harvie, George - Delta  
McCallum, Doug - Surrey

Stewart, Kennedy - Vancouver  
van den Broek, Val - Langley City  
Walker, Darryl - White Rock

**METRO VANCOUVER REGIONAL DISTRICT  
GEORGE MASSEY CROSSING TASK FORCE**

Minutes of the Regular Meeting of the Metro Vancouver Regional District (MVRD) George Massey Crossing Task Force held at 1:02 p.m. on Wednesday, July 24, 2019 in the 28<sup>th</sup> Floor Committee Room, 4730 Kingsway, Burnaby, British Columbia.

**MEMBERS PRESENT:**

Chair, Board Chair Sav Dhaliwal, Metro Vancouver Board  
 Chief Ken Baird, Tsawwassen  
 Mayor Malcolm Brodie, Richmond  
 Mayor Jonathan Coté, TransLink Mayors Council on Regional Transportation  
 Mayor Jack Froese, Langley Township (arrived at 1:09 p.m.)  
 Mayor George Harvie, Delta  
 Mayor Val van den Broek, Langley City  
 Mayor Darryl Walker, White Rock

**MEMBERS ABSENT:**

Mayor Doug McCallum, Surrey  
 Mayor Kennedy Stewart, Vancouver

**STAFF PRESENT:**

Neal Carley, General Manager, Planning and Environment  
 Carol Mason, Chief Administrative Officer  
 Genevieve Lanz, Legislative Services Coordinator, Board and Information Services

**1. ADOPTION OF THE AGENDA**

**1.1 July 24, 2019 Regular Meeting Agenda**

**It was MOVED and SECONDED**

That the George Massey Crossing Task Force adopt the agenda for its regular meeting scheduled for July 24, 2019 as circulated.

**CARRIED**

**2. ADOPTION OF THE MINUTES**

**2.1 June 27, 2019 Regular Meeting Minutes**

**It was MOVED and SECONDED**

That the George Massey Crossing Task Force adopt the minutes of its regular meeting held June 27, 2019 as circulated.

**CARRIED**

### 3. DELEGATIONS

#### 3.1 Roderick V. Louis

Roderick Louis spoke to members regarding the George Massey Crossing project, requesting the MVRD Board write a letter to the BC Minister of Transportation and Infrastructure regarding a structural assessment of the Massey Tunnel, the release of engineering reports to Metro Vancouver and the public, and the opportunity for public consultation related to bus-only, and bicycle and pedestrian lanes.

Presentation material titled “BC’s Massey Tunnel” is retained with the July 24, 2019 George Massey Crossing Task Force.

### 4. INVITED PRESENTATIONS

1:09 p.m. Mayor Froese arrived at the meeting.

#### 4.1 Lina Halwani, Director Planning, Major Project Director and Pam Ryan, George Massey Crossing, Ministry of Transportation and Infrastructure

Lina Halwani, Director Planning, Major Project Director and Pam Ryan, George Massey Crossing, Ministry of Transportation and Infrastructure, provided members with a presentation on the George Massey Crossing project, highlighting multi-modal needs assessment, existing tunnel condition, structure feasibility, specifications and impacts, lane alternative analysis, and next steps.

Discussion ensued on dedicated lanes within the transportation network, multi-use path system, impact on commercial transport vehicles, and environmental, technical and seismic assessments.

Presentation material titled “George Massey Crossing Project – Phase 2: Crossing Options” is retained with the July 24, 2019 George Massey Crossing Task Force agenda.

### 5. REPORTS FROM COMMITTEE OR STAFF

#### 5.1 Manager’s Report

Report dated July 15, 2019 from Neal Carley, General Manager, Planning and Environment, providing members with an update on the George Massey Crossing project, highlighting Metro Vancouver participation in a Ministry of Transportation and Infrastructure technical workshop.

#### **It was MOVED and SECONDED**

That the George Massey Crossing Task Force receive for information the Manager’s Report dated July 15, 2019.

**CARRIED**

**6. INFORMATION ITEMS**

No items presented.

**7. OTHER BUSINESS**

No items presented.

**8. BUSINESS ARISING FROM DELEGATIONS**

No items presented.

**9. RESOLUTION TO CLOSE MEETING**

No items presented.

**10. ADJOURNMENT/CONCLUSION**

**It was MOVED and SECONDED**

That the George Massey Crossing Task Force conclude its regular meeting of July 24 2019.

**CARRIED**

(Time: 2:06 p.m.)

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Genevieve Lanz,  
Legislative Services Coordinator

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Sav Dhailwal, Chair

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To: George Massey Crossing Task Force

From: Neal Carley, General Manager, Planning and Environment  
Heather McNell, Director, Regional Planning and Electoral Area Services

Date: September 24, 2019 Meeting Date: October 2, 2019

Subject: **George Massey Crossing Project – Results of Technical Evaluation on the Six Short Listed Options**

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**RECOMMENDATION**

That the George Massey Crossing Task Force receive for information the report titled “George Massey Crossing Project – Results of Technical Evaluation on the Six Short Listed Options” dated September 24, 2019.

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**PURPOSE**

To provide an update on the Province’s George Massey Crossing Project technical evaluation on the short listed options for the George Massey Crossing.

**BACKGROUND**

The Finance and Intergovernment Committee and MVRD Board received updates on the George Massey Crossing project in February, March and April 2019. At the April meeting, the MVRD Board passed a resolution for general support of the principles and goals for the George Massey Crossing developed by the Ministry of Transportation and Infrastructure.

The George Massey Crossing Task Force, struck by Chair Dhaliwal earlier in 2019, held meetings on June 27, 2019 and July 24, 2019. At the June meeting, the Task Force received a presentation by the provincial project team on the project status, an evaluation framework for the options, and a long list of 18 options for a preliminary evaluation.

At the July meeting, the Task Force received a presentation by the provincial project team that included a short list of six options for further evaluation. The Task Force provided feedback to the provincial project team at both meetings and the provincial project team has continued with the technical evaluation of the six technical options.

This report provides an update to the George Massey Crossing Task Force on the technical evaluation by the provincial project team on the short listed technical options for the George Massey Crossing.

**GEORGE MASSEY CROSSING PROJECT**

In 2018, the Province completed an independent technical review of the George Massey Tunnel replacement and the 10-lane bridge that had been approved at the time. The technical review was released in December 2018 and a provincial project team through the Ministry of Transportation and Infrastructure started the technical evaluation of the options for the new crossing in light of the findings of the independent technical review. The provincial project team is working closely with

Metro Vancouver, TransLink, member jurisdictions, and First Nations to develop and evaluate the crossing options.

The provincial project team has undertaken a detailed technical evaluation of the following six options:

1. New eight-lane immersed-tube tunnel with multi-use pathway.
2. New eight-lane bridge with multi-use pathway.
3. New eight-lane deep-bored tunnel plus use of the existing tunnel for a multi-use pathway.
4. New six-lane immersed-tube tunnel plus use of the existing tunnel to provide two dedicated lanes for transit.
5. New six-lane bridge plus use of the existing tunnel to provide two dedicated lanes for transit.
6. New six-lane deep-bored tunnel plus use of the existing tunnel to provide two dedicated lanes for transit.

The provincial project team held staff workshops on August 8, August 15 and September 12, 2019. The workshops were led by the provincial project team and their consultant team and attended by staff from Metro Vancouver, TransLink, City of Richmond, City of Delta, and the Tsawwassen First Nation.

At the workshops, the provincial project team provided additional information on the potential use of the existing tunnel and the options for a new crossing using either a deep-bored tunnel, immersed-tube tunnel or a bridge.

### **Existing Tunnel**

With regular maintenance and rehabilitation, the existing George Massey Tunnel has approximately 50 years of serviceable life remaining; however, it does not meet current seismic standards for new or improved infrastructure. Based on feedback from the George Massey Crossing Task Force, the provincial project team considered the use of the existing tunnel for one of the following three options:

- i) multi-use path and as a utility crossing;
- ii) 2 lanes dedicated for transit and as a utility crossing; or
- iii) utilities crossing only.

For the multi-use path and transit options, the existing tunnel would require ground densification to increase the seismic resistance to withstand a one-in-475-year seismic event. The existing tunnel would also require additional flood protection around entrances. The cost of these upgrades would be substantial.

### **Deep Bored Tunnel Options**

The deep-bored tunnel options (both six and eight lane) are technically challenging and are assessed as high risk. A tunnel boring machine would be required to bore a total distance of 7 km to install two tunnels of approximately 3.5 km each and would be about 79m at the deepest point. The tunnels would extend beyond the current interchanges on both sides of the river to enable a maximum 5 per

cent grade for the road. During the boring stages, the tunnel boring machine would numerous cutting head changes (each change poses a risk of sink hole formation) and removal of three million cubic meters of salt-contaminated soil during construction. With an outside diameter estimated to be 18.5 meters, the tunnel-boring machine would be one of the largest in the world. For comparison, the Bertha tunnel-boring machine for the Alaskan Way Viaduct replacement tunnel project in Seattle was 17.5 meters in diameter, and this project would require two tunnels that diameter.

Ground densification for seismic resistance would be required on both sides of the river where the tunnel is within or just under the liquefaction zone, but not under the river where the tunnel would be well below the liquefaction zone. Ground densification on either side of the existing tunnel would also be required because for both six- and eight-lane options, the existing tunnel would be used as a multi-use pathway, as the deep bored tunnel options have been deemed inappropriate for that use.

Large launching pits for the tunnel boring machine would be required on both sides of the river. The pits are being estimated to be as deep as a 10-storey building and as wide and long as a football field. The feasibility of constructing these pits in the prevailing soil conditions has not yet been confirmed.

An environmental assessment will be required due to the potential environmental risks to the river during construction and the ground densification that will be required. Costs are not yet available, but this option is estimated to be about three times more expensive than the immersed-tube tunnel and the bridge options (both of which are estimated to be fairly similar).

For Metro Vancouver, there would be no impacts to Deas Island Regional Park. Staff would have to assess potential impacts on Metro Vancouver utilities if either of the deep bored tunnel options proceed.

### **Immersed-Tube Tunnel Options**

The immersed-tube tunnel options (both six and eight lane) are moderately challenging as they would require around 1 km of tunnel, a large staging area and removal of 1.5 million cubic meters of salt-contaminated soil during construction. These options would have the greatest environmental impact during construction as the approaches would require excavation on both sides of the river and the river bottom trenched to hold the tunnel. Ground densification for seismic resistance would be required over the full length of the tunnel length including within the river. For the six-lane option, ground densification on either side of the existing tunnel would also be required.

The environmental assessment is expected to be the most complex due to the in-river and riverbank work. Construction would be limited around a six-month window each year and would likely require two or more construction seasons. Costs are not yet available but are expected to be similar to a bridge crossing. Under the new federal *Fisheries Act*, temporary disturbance to the river would be assessed and will require habitat offsets. The extent of the habitat offsets has not been determined.

For Metro Vancouver, Deas Island Regional Park would be impacted during construction as the east and west portions of the park would be separated by the excavation for the Delta side approach, likely for two years and possibly longer. After construction, the park would be restored and any ongoing impacts to the park would be limited to the added two to four lanes of traffic in the



immediate area. Staff would have to assess for potential impacts on Metro Vancouver utilities if either of the immersed tube tunnel options proceed.

### **Bridge Options**

The bridge options (both six and eight lane) would require around 3 km of bridge and approaches. The bridge abutments would be on land and the foundations would be 80 m deep or more.

The environmental assessment is expected to be the least complex, as much, but not all, of the assessment would be similar to the previous 10-lane bridge. Costs are not yet available but are expected to be similar to an immersed tube tunnel option.

For Metro Vancouver, Deas Island Regional Park would be impacted during construction as the east and west portions of the park would be separated during the construction of the structure over this area of the park. After construction, the park would be impacted by the traffic noise, lights and shade of the bridge for the life of the bridge. This impact will extend to the river and some nearby communities, particularly in Delta. Staff would have to assess for potential impacts on Metro Vancouver utilities if either of these options proceed.

### **Consultation with TransLink**

TransLink staff, through consultation, have expressed that they do not support the use of the existing tunnel for transit purposes. This is due to the additional transit travel time that is required for use of the existing tunnel.

### **Interim Improvements to Address Congestion**

In addition to the technical options for the George Massey Crossing, the August 15, 2019 workshop focused on interim improvements that could alleviate some of the congestion challenges while the crossing option is being designed and constructed.

The provincial project team is working with staff from the various agencies to evaluate improvement options at the Steveston Interchange, the Highway 17 interchange area, as well as a number of enhancements to improve transit movement through Delta and Richmond. The interim improvements will depend on which crossing option is selected. The objective is to have the package of interim improvements ready for tender by the fall of 2020.

### **Next Steps**

The Province will be presenting the results of the technical evaluation on the six short listed options at the October 2, 2019 Task Force meeting, and will be seeking the Task Force's endorsement of a preferred option(s) for the purpose of their public engagement. The Task Force's recommendation would then go to the Finance and Intergovernment Committee and MVRD Board. It is staff's understanding that public engagement includes engagement with affected local councils.

## **ALTERNATIVES**

1. That the George Massey Crossing Task Force receive for information the report titled “George Massey Crossing Project – Results of Technical Evaluation on the Six Short Listed Options” dated September 24, 2019.
2. That the MVRD Board, based on the Province’s technical analysis, endorse a new eight-lane immersed-tube tunnel with multi-use pathway as the preferred option for the George Massey Crossing for the purposes of public engagement.
3. That the MVRD Board, based on the Province’s technical analysis, endorse a new eight-lane bridge with multi-use pathway as the preferred option for the George Massey Crossing for the purposes of public engagement.
4. That the MVRD Board, based on the Province’s technical analysis, endorse a new eight-lane deep-bored tunnel plus use of the existing tunnel for a multi-use pathway as the preferred option for the George Massey Crossing for the purposes of public engagement.
5. That the MVRD Board, based on the Province’s technical analysis, endorse a new six-lane immersed-tube tunnel plus use of the existing tunnel to provide two dedicated lanes for transit as the preferred option for the George Massey Crossing for the purposes of public engagement.
6. That the MVRD Board, based on the Province’s technical analysis, endorse a new six-lane bridge plus use of the existing tunnel to provide two dedicated lanes for transit as the preferred option for the George Massey Crossing for the purposes of public engagement.
7. That the MVRD Board, based on the Province’s technical analysis, endorse a new six-lane deep-bored tunnel plus use of the existing tunnel to provide two dedicated lanes for transit as the preferred option for the George Massey Crossing for the purposes of public engagement.

## **FINANCIAL IMPLICATIONS**

If the MVRD Board chooses Alternative 1, the Board may choose to request further information on one or more of the short-listed options. Any financial implications for Metro Vancouver that arise due to the George Massey Crossing project will be assessed and reported to the Task Force as the project is developed.

If the MVRD Board chooses one of Alternatives 2-7, the Province will proceed with public engagement on the preferred option(s), including engagement with affected local government councils.

## **SUMMARY / CONCLUSION**

At its July meeting, the George Massey Crossing Task Force received a presentation by the provincial project team that included a short list of six options for further evaluation. The Task Force provided feedback to the provincial project team who has since continued with the technical evaluation of the six options. The existing George Massey Tunnel has approximately 50 years of serviceable life remaining, but it does not meet current seismic standards for new or improved infrastructure.

The two deep-bored tunnel options (six and eight lane) are technically challenging and are assessed as high risk. A boring machine would be required to bore 7 km to install two tunnels of approximately 3.5 km each and would be about 79 m at the deepest point. Ground densification for seismic resistance would be required on both sides of the river where the tunnel is within or just under the liquefaction zone. An environmental assessment would be required due to the potential environmental risks to the river during construction and the ground densification that would be required. This option is estimated to be about three times more expensive than the immersed-tube tunnel and bridge options.

The two immersed-tube tunnel options (six and eight lane) are moderately challenging, requiring about 1 km of tunnel. These options would have the greatest environmental impact during construction. Ground densification for seismic resistance would be required for the full length of the tunnel length including within the river. The environmental assessment is expected to be the most complex due to the in-river and riverbank work. For Metro Vancouver, Deas Island Regional Park would be impacted during construction as the east and west portions of the park would be separated by the excavation for the Delta side approach, likely for two years and possibly longer.

The two bridge options (six and eight lane) would require about 3 km of bridge and approaches. The bridge abutments would be on land and the foundations would be 80 m deep or more. The environmental assessment is expected to be the least complex as much, but not all, of the assessment would be similar to the previous 10-lane bridge. Costs are not yet available but are expected to be about the same as an immersed tube tunnel option.

The Province will be presenting the results of the technical evaluation on the six short listed options to the Task Force, and will be seeking endorsement of a preferred option(s) for the purpose of public engagement. The Task Force's recommendation would then go to the Finance and Intergovernment Committee and MVRD Board.

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